MARTYNOVSKIY, V., Prof.

Refrigeration and Refrigerating Machinery

Using low potential heat for producing cold, Khol. tekh. 30, no. 1, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

MARTYNOVSKIY, V., professor; ZHADAN, S., aspirant.

Examining a freon ejector machine serving as a refrigerating generator. Khol.tekh. 30 no.4:55-58 O-D '53. (MLRA 7:3)
(Refrigeration and refrigerating machinery)

MARTYNOVSKIY, V., professor, doktor tekhnicheskikh nauk; GOKHSHTEYN, D., professor, doktor tekhnicheskikh nauk. Reviewer.

"Techincal thermodynamics." M.P.Vukalovich, I.I.Novikov. Reviewed by V.Martynovskii, D.Gokhshtein. Khol.tekh. 30 no.4:76-77 O-D '53. (Thermodynamics) (Vukalovich, M.P.) (Novikov, I.I.)

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001032620014-2"

MARTYNOVSKIY, V.

MARTYNOVSKIY, V., professor; ZHADAN, S., inzhener.

Dependence of the coefficient of ejection of a freon ejection machine on the elements of the diffusor construction. Khol. tekh. 31 no.3:66-67 Jl-S '54. (MLRA 7:9)
(Refrigeration and refrigerating machinery)

MARTYNOVSKIY, V., professor; ZHADAN, S., inzhener.

Use of freon ejecting refrigerating machines in solar installations. Khol.tekh. 31 no.4:56-57 O-D '54. (MLRA 8:1)
(Refrigeration and refrigerating machinery) (Solar engines)

Martynovskiy, V S

Teplovyye nasosy /Heat pumps/

Moskva, Gosenergoizdat, 1955.

191 p. Illus., Diagrs., Tables.

Bibliography: p. 189-191.

MARTYNOVSKIY, V.

AID P - 1333

Subject : USSR/Engineering

Card 1/1 Pub. 110-a - 15/19

Authors : Kazavchinskiy, Ya. Z., Kand. of Tech. Sci. and Martynovskiy, V. S., Doc. of Tech. Sci.

Title : Zhukovskiy, V. S., Engineering Thermodynamics. (Review)

Periodical : Teploenergetika, 2, 57-59, F 1955

Abstract : The textbook on engineering thermodynamics of Zhukovskiy, V. S., 3 rd. ed., revised, published by Gostekhizdat in 1952, is reviewed.

Institution : None

Submitted : No date

MARTYNOVSKIY, V.S.

AID P - 2434

Subject : USSR/Electricity

Card 1/1 Pub. 26 - 33/33

Authors : Kazavchinskiy, Ya. Z., and Martynovskiy, V. S.

Title : On errors in G. I. Fuks' review of the book "Tekhnicheskaya Termodinamika" ("Engineering Thermedynamics") by M. P. Bukalovich and I.I. Novikov

Periodical : Elek sta 5, 63-64, My 1955

Abstract : The article refers to the book review publishad in the No 2, 1954 issue of this journal and lists errors made by the reviewer in his mathematical analysis.

Institution: None

Submitted : No date

AID P - 3886

Subject : USSR/Power Eng.

Card 1/1 Pub. 110-a - 7/17

Authors : Martynovskiy, V. S., Dr. Tech. Sci., Prof., and V. P. Alekseyev, Kand. Tech. Sci. Odessa Technical Institute of the Food and Refrigerating Industry

Title : Thermodynamical analysis of the vortex effect for separate stagnation temperatures in gases and vapors

Periodical : Teploenergetika, 11, 31-34, N 1955

Abstract : Tests data on vortex tubes (Ranque, Hilsch, etc.), using different gases are given. A flue analysis through the tubes' cross-section area is presented. The use of tubes for heating and refrigerating purposes is discussed. Five diagrams, 2 tables. One Russian reference, 1952, 8 English, 1933-1951, 4 German, 1946-1953.

Institution : None

Submitted : No date

MARTYNOVSKIY, V.S.

Thermodynamic analysis of the processes in the preliminary cooling of gases. V. S. Martynovskii. *Zhur. Tekh. Fiz.* 25, 1750-6(1955).—The process of the preliminary cooling of gases is analyzed thermodynamically to det. possible economies in the energy consumption. J. Rovtar Leach

CH

MARTYNOVSKIY, V., professor; MEL'TSER, L., dotsent

Degree of thermodynamic efficiency of heat-transfer and refrigerating equipment. Khol.tekh. 32 no.1:42-44 Ja-Mr '55. (MLRA 8:7)
(Thermodynamics)

MARTYNOVSKIY,V., doktor tekhnicheskikh nauk, professor; MEL'TSER,L., kandidat tekhnicheskikh nauk

Temperature limits in the efficient use of compressed air refrigerators. Khol.tekh.32 no.2:50-53 Ap-Je '55. (MIRA 8:10)
(Refrigeration and refrigerating machinery)

MARTYNOVSKIY, V., professor; ALEKSEYEV, V., inzhener.

Producing cold through separation of natural gas by turbulence.
Khol.tekh. 32 no.3:46-48 Jl - S '55. (MLRA 9:1)
(Heat--Radiation and absorption)

MARTYNOVSKIY, V. S.

The effect of the vortex temperature separation of superheated vapors and an experimental verification of the Hilsch-Fulton hypothesis. V. P. Alekseev and V. S. Martynovskii. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1956, No. 1, 71-9.—The effectiveness of the vortex tube in the sepn. of dry air exceeds that for the sepn. of steam-contg. air, which is connected with the aggregate state changes in the latter with the drop in temp. The approach to the isentropic temp. drop at the cold end of the vortex tube reaches a value close to 0.5 for dry air (at the initial pressure of 6.0 atm. abs., and t_0 = 20°). Ranque-effect studies with CO_2 and CH_4 show small deviations in the temp. differences realized, in comparison with air, and these deviations are the larger the higher the isentropic temp. drop. An investigation of the velocity field in the tube has resulted in the main in confirming the Hilsch-Fulton hypothesis, which explains the Ranque effect by a rearrangement of the vortex. An addnl. effect was, however, observed in the change in sign of the angular gradient of gas-layer velocities in the cross-section removed 11 diams. from the vortex chamber. The centrifugal kinetic energy "stream" in these cross sections is therefore changed to a centripetal. This phenomenon was observed in gas layers close to the diaphragm-aperture radius. This stream rearrangement occurs in a relatively short stretch not exceeding 10-11 times the diam. of the vortex chamber. A temp. reverse phenomenon was observed in a no. of tubes, at which hot air was escaping from the "cold" tube end and cold air from the "hot" end. This reverse is apparently due to the rearrangement of the vortex mentioned above. It can be observed only at definite relative diams. of the diaphragm apertures.

W. M. Sternberg

[illegible]

USSR/Processes and Equipment for Chemical Industries
Processes and Apparatus for Chemical Technology K-1

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 14164

Author : Martynovskiy V., Alekseyev V.
Title : New Designs of Refrigeration Machines

Orig Pub : Kholodil'n. tekhnika, 1956, No 3, 39-43

Abstract : No abstract.

Card 1/1

MARTYNOVSKIY, V S.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1...
AUTHOR MARTYNOVSKIJ,V.S., ALEKSEEV,V.P.
TITLE The Investigation of the Effect of the Vortex-Like Temperature Separation of Gases and Vapors.
PERIODICAL Žurn techn.fis,26,fasc.10, 2303-2315 (1956)
Issued: 11 / 1956

At a pressure of only some atmospheres of the gas reaching the nozzles of the tube a cold gas flow can be obtained, the temperature of which is from 30 to 70° below the initial slowing down temperature of the gas entering the nozzle. At the same time the perispheral rotating gas flow leaves the tube with a slowing-down temperature that is considerably above the initial temperature of the compressed gas. The experimental order for tests with counterflow vortex tubes (inner diameter D = 4,4; 9,0; 16,0 and 28 mm) was discussed on the basis of a drawing. The vortex tubes made of red copper contained a set of diaphragms, vortex chambers, and "hot ends". The object of the tests was the determination of rational constructive characteristics of the tubes and the checking of existing hypotheses concerning the mechanism of the vortexlike temperature separation. The following geometric characteristics of the vortex tubes are concerned: Construction of the nozzle input, diameter of aperture, length and geometric shape of the hot throttle tube and of the cold tube, absolute dimensions of the tubes, influence of the parameters of the compressed air on the vortex effect, air moisture, pressure of the compressed air. A hypothesis on the mechanism of the vortexlike separation effect: The essential points of the hypothesis developed by C.FULTON (and HILSCH ?)

Žurn. techn. fis, 26, fasc. 10, 2303-2315 (1956) CARD 2 / 2 PA - 1186

Refrig. Engineer, 5 (1950), which is the most conclusive, are enumerated. According to FULTON the effect of the vortexlike temperature separation is univocally determined by the values of Pr⁻ (= turbulent analogy to PRANDTL'S number) and by the isentropic pressure drop t_S. The experiments carried out by the authors with some substances confirm FULTON'S hypothesis. However, as a final criterion of its correctness the data on the field of the angular velocities of the gas layers in a vortex flow (which was produced by the authors in a tube with D = 28 mm) may be used. The field of velocities in the vortex tube: The fields of the total and static pressures, the directions of the velocity vectors, and the slowing down temperatures in the flow for the radii 2, 4, 6, 8, 10 and 12 mm were measured by means of a probe. The results are shown in diagrams. In conclusion the vortex effects on carbonic acid, methane, and ammonia are discussed and results are shown in a table.

MARTYNOVSKIY, V.

1620. APPLICATION OF HEAT PUMPS. Martynovskii, V. (Kholod. Tekh. (Refrig. Tech., Moscow), 1956, vol. 33, (1), 53-56).

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001032620014-2"

MARTYNOVSKIY, V., doktor tekhnicheskikh nauk, professor; ALEKSEYEV, V., kandidat tekhnicheskikh nauk.

New refrigerating machines. Khol.tekh.33 no.3:39-43 Jl-S '56. (Refrigeration and refrigerating machinery) (MLRA 9:10)

MARTYNOVSKIY, V.S., doktor tekhn.nauk, prof.

Utilizing the electrothermal effect in heat pumps. Trudy OTIP i KHP 8 no.1:3-11 '57. (MIRA 12:8)

1. Kafedra kholodil'nykh mashin Odesskogo tekhnologicheskogo instituta pishchevoy i kholodil'noy promyshlennosti.
(Heat pumps)

SOV/112-59-5-8605

14(6)

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 5, p 29 (USSR)

AUTHOR: Martynovskiy, V. S., and Minkus, B. A.

TITLE: Comparison Between Compressor-Type and Absorption-Type Thermal Pump Plants

PERIODICAL: Tr. Odessk. tekhnol. in-ta pishch. i kholodil'n. prom-sti, 1957, Vol 8, Nr 1, pp 13-21

ABSTRACT: Wherever heating from the central heating-power stations is impossible, thermal-pump plants can be reasonably used, particularly in the areas of large hydroelectric stations. The advantages of a thermal pump as compared to fuel combustion in furnaces or boilers are: substituting low-grade fuel for high-grade, lesser load on the city transportation and sometimes on the railroad transportation, and improving atmospheric conditions. Reasonable schemes and designs of thermal-pump plants should be sought, an important problem being the choice between compressor type and absorption type equipment. The range of temperatures available in a single-stage absorption-

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type thermal pump is presented graphically, as well as the degree of thermodynamic perfection of various absorptional and compressor step-up and step-down transformers for various temperature differences. Not only average temperatures of the heat emitter, heat receiver, and the carrying agent, but also the law of variation of these temperatures have a bearing on the choice of plant type; this is illustrated by a graph. It is noted that capital investment, particularly in the step-up transformers, frequently plays a decisive role. It is pointed out that, with equal average temperature drops in the equipment, the metal requirement by absorption-type plants is higher that that of compressor-type plants; however, absorption plants require a smaller investment, particularly in the low-capacity range. It is indicated that the choice between absorptional and compressor types is not singular; the choice must be made on the basis of a specific engineering economic analysis. The field of preferential use of absorptional plants is restricted to low capacities and low temperatures of the heat emitter.

Card 2/2

M.L.Z.

MARTYNOVSKIY, V., doktor tekhn.nauk, prof.

Modern window air conditioners [with summary in English].
Khol. tekh. 35 no.1:28-30 Ja-F '58. (MIRA 11:2)
(Air conditioning--Equipment and supplies)

MARTYNOVSKIY, V., prof., doktor tekhn.nauk

Advantages of gas refrigeration machines with isochoric regenerative heat exchange. Khol.tekh. 35 no.5:20-24 S-O '58. (MIRA 11:11)

1. Odesskiy tekhnologicheskiy institut pishchevoy i kholodil'-noy promyshlennosti.
(Refrigeration and refrigerating machinery) (Heat regenerators)

MARTINOVSKIY, V. S., NAYER, V. A.

"On the Energy Efficiency of Thermoelectrical Refrigeration."

Report submitted for the 10th Intl. Refrigeration Congress, Copenhagen, 19 August - 2 September 1959.

MARTYNOVSKIY, V.S.

SCIENTIFIC-TECHNICAL CONFERENCE ON SHIPBOARD AIR-CONDITIONING -- Leningrad, Sudostroyeniye, No 9, Sep 59, (pp 66-67)

In June 1959, a scientific-technical conference concerned with shipboard air conditioning was held in Nikolayevsk. It was organized by the Nikolayevskiy Sovnarkhoz, the Nikolayevskaya Oblast Scientific and Technical Society [NTO] of the Shipbuilding [sudostroyitel'naya] Industry, and the Council of the Scientific and Technical Society [NTO] of the Nikolayevsk Shipbuilding [korablestroyitel'nyy] Institute.

Representatives of 138 plants, designing bureaus, and educational institutions took part in the conference.

In the opening address, "The Present Situation and Development Plans of Shipboard Air Conditioning," Docent V. M. Burnis delineated the main tasks of the conference as follows: the exchange of information about and the solutions to the problems in the field of planning, testing, and operating air-conditioning systems on maritime and river ships; the critical evaluation of existing norm formulation; the problems of operating noises; research into the problem of the rational use of air; and the automatization of air-conditioning systems.

Papers read and discussed at the conference included: "Modern Techniques in Shipboard Air Conditioning" by Docent I. V. Tarabrin, Cand. Tech. Sci.; "Problems of Processing the Bold Air on Maritime Fruit Carriers" by V. F. Trius, Eng.; "The Present Situation of and Development Plans for Air Conditioning in India" by Professor V. S. Martynovskiy, Dr. Tech. Sci.; "Present Shipboard Air-Conditioning Techniques in Finland" by A. Ya. Matveyev, Eng.; "Refrigerating Machinery for Shipboard Air-Conditioning Systems" by Ye. Kh. Rusov, Eng.; "Using High-Pressure Systems for Shipboard Air Conditioning" by V. V. Loskutov, Cand. Tech. Sci.; "Long-Range Development Plans for Shipboard Refrigerating Machinery in the USSR During the [illegible] Seven-Year Plan" by R. V. Pavlov, Eng.; "The Production of Shipboard Refrigeration Equipment at the Kompressor Plant" by [illegible], Eng.; "Planning and Operating the First Domestically [illegible] Air-Conditioning Equipment on River Ships" by [illegible] Semenin, Eng.; "The Air-Conditioning System on board the Sea-going MV Feliks Dzerzhinskiy" by [illegible], Eng., and "The High-Pressure System of Comfortable Air-Conditioning on board the Maritime Dry-Cargo Vessel Leninogorsk" by [illegible] Rybobshapka, Eng.

End

MARTYNOVSKIY, V.S.

SOV/66-59-4-19/20

AUTHOR: None Given

TITLE: All-Union Scientific Technical Convention on Refrigeration Engineering

PERIODICAL: Kholodil'naya tekhnika, 1959, Nr 4, pp 61-65 (USSR)

ABSTRACT: Under the auspices of the Leningradskiy tekhnologicheskiy institut kholodil'noy promyshlennosti (Leningrad Technological Institute of Refrigeration Industry), of the Vsesoyuznyy nauchno-issledovatel'skiy institut kholodil'noy promyshlennosti im. Mikoyana (All-Union Scientific Research Institute of Refrigeration Industry im. Mikoyan) and of the Vsesoyuznaya sektsiya kholodil'shchikov (All-Union Section of Refrigeration Workers), a convention was held in Leningrad from the 6 through 9 August, 1959, which was attended by 534 people. Below are given the names of the principal lecturers, the names of the institutions they represent and the titles of their lectures: V.Ya. Kokorev (Ministry of Trade of the RSFSR) "Tasks of Development and of Application of Refrigeration in the National Economy of the USSR"; T.V. Jogolina, Engineer (Central Designing Bureau of Refrigeration Machine Building) "Fields of Application of Refrigeration Equipment in Industry"; V.P. Irzhevskiy, Engineer (Odessa Designing Institute of Complex Automation of Production

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Processes in the Food Industry) "Orientation and Designing of Automatic Systems in Refrigeration Installations"; B.L. Tsyrlin, Engineer (VNIIKhI) "Investigation of the Work of Compressors of the Piston Block-Crankcase Type"; I.B. Yakobson, Candidate of Technical Sciences (VNIIKhI) "Investigation of Small Freon Compressors With Built-in Electric Motors"; D.M. Ioffe, Candidate of Technical Sciences (VNIIKhI) "Analysis and Investigation of Heat-Exchanging Machinery with a Ribbed Heat Transmitting Surface"; L.M. Rozenfel'd, Professor and Doctor of Technical Sciences (Leningrad Technological Institute of Refrigeration Industry) "The Problem of Complete Utilization of Refrigeration Machines"; V.S. Martynovskiy, Professor and Doctor of Technical Sciences and B.B. Paruleykar, Professor (Odessa Technological Institute of Food and Refrigeration Industries) "Thermal Air Separation at the Cold End of the Vortex Tube"; I.P. Usyukin, Professor and Doctor of Technical Sciences (Moscow Institute of Chemical Machine Building) "Results of the Two Years Working Period of the Installation BR-1 and the Prospects of Producing Technological Oxygen"; A.I. Moroz, Candidate of Technical Sciences and B.V. Danishchuk, Engineer (VNII of Oxygen Machine Building); K.I. Strakhovich, Professor and G.F. Ozhigov, Candidate of Technical Sciences (Leningrad Technological Institute of Re-

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frigeration Industry) "Theoretical Investigation of Expansion of Moist Vapor of the Air Turbo-Pressure-Reducer"; A.A. Gogolin, Candidate of Technical Sciences (VNIIKhI) "Ways of Developing Air Conditioning Engineering in the USSR"; A.L. Satanovskiy, Engineer (Institute of Thermal Power Engineering of the AS USSR) "Air-Water-Evaporation Cooling and Air Conditioning on the Cranes in Hot Workshops"; L.K. Lozina-Lozinskiy, Professor and Doctor of Biological Sciences (Institute of Cytology of the AS USSR) "The Latest in the Doctrine Pertaining to the Influence of Low Temperatures on Organisms"; N.A. Golovkin, Professor and Doctor of Technical Sciences (Leningrad Technological Institute of Refrigeration Industry) "Mechano-Chemistry of the Muscular Tissue Under Refrigeration Processes of Food Products of Animal Origin"; D.G. Rutov, Candidate of Technical Sciences and P.A. Alekseyev, Candidate of Technical Sciences (VNIIKhI) "Conditions of Storage and Weight Losses of Frozen Meat in a Cold Room with Jacket Heat Protection"; A.P. Sheffer, Candidate of

Card 3/4

Technical Sciences and A.G. Saatchan (All-Union Scientific Research Institute of Meat Industry) "Single-Stage Freezing of Meat"; A.P. Chesnokov (Astrakhan' Technical Institute of Fish Industry) "Proteolysis of Sprats and the Influence of Temperature on the Terms of Ripening and Storage of Sprat Preserves".

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SOV/66-59-2-8/...

14(1)

AUTHORS: Martynovskiy, V., Professor, Doctor of Technical Sciences, Paruleykar, B., Professor

TITLE: Air Temperature Separation at the Cold End of the Vortex Tube (Temperaturnoye razdeleniye vozdukha na kholodnom kontse vikhrevoy truby)

PERIDOCAL: Kholodil'naya tekhnika, 1959, 36, Nr 2, pp 29-33 (USSR)

ABSTRACT: The utilization of air as refrigerating agent in temperature vortex separators leads to greater energy losses as compared with ordinary methods of refrigeration. In the event of air being used as refrigerating agent the vortex separator is connected with a compressed air installation. The research work conducted at the Bombay Technical Institute consisted in developing a simple design of a vortex separator with a view to obtaining the lowest possible air temperature at the cold end of the tube at low air pressure. A comparatively short time after the discoveries of Ranque, described by C. Fulton [Ref. 1], research work concentrated on developing the capacity of vortex separators, enabling to produce lowest air temperature while maintaining air pressure. In this connection the work of R. Hilsch [Ref. 2]

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SOV/66-59-2-8/31

Air Temperature Separation at the Cold End of the Vortex Tube

deserves mention as well as that of A. Merkulov [Ref 3], who succeeded in obtaining low temperatures by altering the design and dimensions of the vortex chamber, the nozzle and the tubes of the hot and cold end. Experiments with vortex tubes of various designs and dimensions were carried out by V. Alekseyev and V. Martynovskiy [Ref 4,5] in the Laboratory of the Odesskiy tekhnologicheskiy institut pishchevoy i kholodil'noy promyshlennosti (Odessa Technological Institute of Food and Refrigeration Industries). The article describes various nozzle, chamber and tube designs, showing comparative tables with data and results obtained.
There are 3 graphs, 6 block diagrams, 3 tables and 6 references, 4 of which are Soviet, 1 English and 1 German.

ASSOCIATIONS: Odesskiy institut pishchevoy i kholodil'noy promyshlennosti (Odessa Institute of Food and Refrigeration Industries) (Martynovskiy, V.) Bombeyskiy tekhnicheskiy institut (Bombay Technical Institute) (Paruleykar, B.)

Card 2/2

ROZENFEL'D, Lev Markovich, prof., doktor tekhn.nauk; TKACHEV, Anatoliy Georgiyevich, prof., doktor tekhn.nauk. Prinimal uchastiye GUREVICH, Ye.S., inzh.. BADYL'KES, I.S., prof., doktor tekhn. nauk, retsenzent; MARTYNOVSKIY, V.S., prof., doktor tekhn.nauk, retsenzent; NIKOLAYEVA, N.G., red.; MEDRISH, D.M., tekhn.red.

[Refrigerating machinery and apparatus] Kholodil'nye mashiny i apparaty. Izd.2., perer. i dop. Moskva, Gos.izd-vo torg. lit-ry, 1960. 656 p. (MIRA 13:7)
(Refrigeration and refrigerating machinery)

89425

S/143/60/000/006/006/008
A169/A026

26.2532

AUTHORS: Martynovskiy, V.S., Doctor of Technical Sciences, Professor; Nayer, V.A., Candidate of Technical Sciences

TITLE: Investigation of an Electrothermal Evaporation Apparatus

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Energetika, 1960, No. 6, pp. 104 - 109

TEXT: Semiconductor thermopiles can be used for generating cold in refrigeration equipment and for producing heat in evaporation apparatus. The power analysis of the electrothermal effect of cooling shows that the conventional method of generating cold with the aid of compressor or absorption devices is still more efficient for the time being. A semiconductor cooling device, functioning according to the Peltier effect, will have a 2.5 - 3 times higher power consumption than a comparable compressor cooling unit. A number of essential advantages of semiconductor thermopiles in cooling units creates favorable prospects for their application in different devices and low-capacity cooling equipment (some 10 kcal/h). Semiconductor thermopiles can be used with greater efficiency in evaporation and distillation apparatus. The authors investigated ex-

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Investigation of an Electrothermal Evaporation Apparatus S/143/60/000/006/006/008 A169/A026

perimentally the efficiency of a semiconductor thermopile in an evaporation installation. The thermopile consisted of 54 elements of 5 x 10 x 10 mm. The semiconductor material was obtained at the Institut poluprovodnikov imeni akademika A.F. Ioffe (Institute of Semiconductors imeni Academician A.F.Ioffe). The experimental apparatus (Fig. 2) and the measuring system (Fig. 3) are briefly described. The capacity of the semiconductor heating element was 150 kcal/h. The results of the experimental investigation of the low-capacity evaporation installation confirm the possibility to reduce the electric energy consumption by four to five times with a semiconductor thermopile compared to the direct electric heating method (at a temperature difference in the apparatus equal to 10°C). There are 5 figures and 3 Soviet references.

ASSOCIATION: Odesskiy tekhnologicheskiy institut kholodil'noy promyshlennosti (Odessa Technological Institute of the Refrigeration Industry)

SUBMITTED: January 29, 1960

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?229L
S/066/60/000/001/001/002
A003/A029

26.2181

AUTHORS: Martynovskiy, V, Paruleykar, B., Professors

TITLE: The efficiency of the turbulent cooling method

PERIODICAL: Kholodil'naya tekhnika, no. 1, 1960, 3 - 9

TEXT: The lowest temperatures attainable when dividing the air into a hot and cold flow are considered. Fig. 1 shows the diagram of a turbulent Ranques tube. The temperature difference t_x of the air passing to the nozzles and in the cold section of the turbulent tube does not characterize the power efficiency. Fulton's hypothesis (Ref. 1, Ranques Tube. Refrigerating Engineering, 1950, no. 5) makes it possible to determine the maximum approximation to the adiabatic temperature drop Δt_s, i.e., the highest value of the ratio $\eta = \frac{\Delta t_x}{\Delta t_s}$. According to Fulton's theory

$$\eta = \left(\frac{\Delta t_x}{\Delta t_s}\right)_{max} = 1 - \frac{1}{2Pr^*} \qquad (1)$$

The value Pr* here is the so-called turbulent analogon of Prandtl's criterion which can be taken as unit. Experience shows, however, that in effectively designed turbulent pipes the mentioned limit can be surpassed. In experiments carried out by engineer A. Voytko at low pressures (p_c= 1.1 atm) in the Odesskiy tekhno-

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22294
S/066/60/000/001/001/005
A003/A029

The efficiency of the turbulent cooling method

logicheskiy institut pishchevoy i knolodil'noy promyshlennosti (Odessa Technologi-
cal Institute of the Food and Refrigerating Industry) the highest value of the
degree of approximation to the adiabatic temperature drop reached 1. It is neces-
sary that the air leaving the refrigerating chamber has a lower temperature than
the surrounding medium. The temperature of the air entering the chamber can be
determined by the formula

$$t = \frac{\left(\frac{1}{\mu} - 1\right) t_c + \Delta t_p + \Delta t}{\frac{1}{\mu\left[1 - \eta\left(1 - \frac{1}{p_c^{\frac{\kappa - 1}{\kappa}}}\right)\right]} - 1} \qquad (2)$$

where η is the degree of approximation to the adiabatic drop, Δ t the temperature
difference in the chamber, Δ t_p the temperature difference in the regenerator. In
pneumatic systems with an air pressure of 6 - 7 atm an air flow can be obtained of
-65 ÷ -70°C. Even without regeneration lower temperatures are obtained than are
to be expected according to Fulton. The highest heat productivity is obtained if
the air leaves the chamber with a temperature close to that of the medium (t_c).

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S/066/60/000/001/001/005
A003/A029

The efficiency of the turbulent cooling method

The cold productivity is in this case $q_0 = c_p (t_c - t_x)$ kcal/kg. If the air leaves with a lower temperature, the application of regeneration shows a higher effect in an air refrigerating machine than in a turbulent refrigerator. The minimum temperature in a turbulent tube corresponds to the value $\mu = 0.3$. The energy consumption in turbulent tubes is therefore 3 times higher than in air refrigerating installations without expander. It is noted that air refrigerating machines operating with regeneration cycle show better power properties than machines without regeneration. Below -70°C the energy efficiency of these machines is better than that of compression machines, including multi-stage types. In the case of decreasing temperature their degree of efficiency rises. Figure 8 shoes the dependence of the energy efficiency of four types of refrigerating installations on the temperature t. It is shown that the turbulent refrigerators have a higher energy consumption, especially when a high output is required. The turbulent cooling method can be successfully applied, however, when replacing the choking effect in reducing the pressure of gas and vapor flows. In reduction of the pressure of natural gas from 200 to 60-50 atm the Ranques effect can be applied with advantage. It can also be used in low-ouput installations where simplicity and cheapness of the installation is more important than saving on energy. In short-time installations operating no longer than 2 - 3 h per day the turbulent method shows good

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22294

The efficiency of the turbulent cooling method S/066/60/000/001/001/003

results. In air-conditioning installations operating with low pressure (1,500 mm water column) and low output (500 m^3 of cooled air per h) the cost of the electric energy is 500 - 600 rubles per year (yearly operation time 500 - 600 h). There are 8 figures and 8 references: 6 Soviet bloc and 2 non-Soviet bloc. The English-language publications read: Fulton, Ranques Tubes, Refrigerating Engineering, 1950, no. 5, and R. Hilsch: The use of the expansion of gases in a centrifugal field as a cooling process. Rev. of Scientific Instruments, vol. 18, 1947, no. 18

ASSOCIATION: Odesskiy tekhnologicheskiy institut pishchevoy i kholodil'noy promyshlennosti (Odessa Technological Institute of the Food and Refrigerating Industry)

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MARTYNOVSKIY, V.; CHAYKOVSKIY, V.; SHMYGLYA, A.

Methods of testing piston-type refrigeration compressors. Khol.tekh. 37 no.3:61-63 My-Je '60. (MIRA 13:7)
(Air compressors)

22596
S/066/60/000/002/001/006
A003/A129

24 2700 1043 1035 1138
17.1204 26.1630

AUTHORS: Martynovskiy, V., Professor, Doctor of Technical Sciences; Nayer, V., Engineer

TITLE: Fields of effective application of semiconductor thermobatteries

PERIODICAL: Kholodil'naya tekhnika, 37 no. 2, 1960, 4 - 7

TEXT: The effective application of semiconductor thermobatteries is studied employing a water cooler and evaporation installations tested in the laboratory of refrigerating machines at the Odesskiy tekhnologicheskiy institut pishchevoy i kholodil'noy promyshlennosti (Odessa Technological Institute of the Food and Refrigerating Industry). Figure 1 shows the principal diagram of the semiconductor water cooler. The water to be cooled is supplied to the cold junctions of the thermobattery. The heat is removed from the hot junctions by various methods. If the heat removal is effected without circulation of the liquid, the surface of the hot section of the water cooler is ribbed and the cold section is insulated. Semiconductor water coolers ensure a more complete reversible heat exchange between the water to be cooled and the coolant. In semiconductor thermobatteries a reversible heat exchange is obtained by parallel connection of the

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A003/A129

groups of thermoelements into thermobatteries. Within the groups the thermoelements are connected in series. The commutation of the thermoelements in such a thermobattery is shown in Figure 2. The processes of water cooling with the aid of a semiconductor thermobattery and a compression installation are shown in Figure 3. It is seen that a step-type thermobattery ensures the cooling of a liquid with the aid of a triangular cycle 1 – 2 – 3. Presently known semiconductor materials with $z \cdot 10^3 = 2.5 - 3.3$ ensure approximately the same power efficiency of the water coolers as compression installations operating with a one-stage compression cycle. A sectional thermobattery is calculated by the following method: the power W used by the thermobattery is calculated by the formula $W = u \sum I_i$ (1), where u is the voltage on the thermobattery, I_i is the current passing through the i-group. The value I_i is determined from the optimum operation conditions of the thermoelements

$$I_i = \frac{(e_1 + e_2)(T - T_{oi})}{\left(\sqrt{1 + \frac{T + T_{oi}}{2} z} - 1\right) r_i}, \qquad (2)$$

where e_1 and e_2 are the thermo-emf of the branches of the thermocouples, r_i is the electrical resistance of the thermocouple in the i-group, T is the temperature of the liquid on hot junctions, T_{oi} is the average temperature of the water to be

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cooled on the section of the i-group. Besides that, $I_i = \frac{u - (e_1 + e_2)(T' - T'_{oi})}{r_i n_i}$, (3)

where T' and T'_{oi} are the temperatures of the junctions of the thermocouples. From Formula (3) the number of thermocouples n_i can be found. The cold output of the i-group is determined by $Q_{oi} = u I_i \varepsilon_{i\ max}$, (4), where $\varepsilon_{i\ max}$ is the refrigerating coefficient of the i-group determined by the following expression:

$$\varepsilon_{i\ max} = \frac{\varepsilon_{max} - \frac{\lambda}{2l\alpha}}{1 + \frac{\lambda}{2l}\left(\frac{1}{\alpha} + \frac{1}{\alpha_0}\right)} \quad (4')$$

The total heat output of a sectional thermobattery is found to be the sum $Q_o = \Sigma Q_{oi}$ (5). In evaporation installations the higher efficiency of semiconductor devices is explained by the small temperature difference between the junctions of the thermocouples and by the high temperature of the cold source. The maximum temperature difference ΔT_{max} is connected with the characteristic z of the materials and with the temperature of the cold source T_o : $\Delta T_{max} = \frac{1}{2} z T_o^2$. (6). In a semiconductor evaporation installation (Fig. 4) the liquid to be evaporated is supplied onto the hot junctions of the thermobattery, where it boils. The vapor formed passes through a pipe to the cold junctions and is condensed. It is shown

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that the efficiency of semiconductor evaportation installations surpasses the efficiency of ejector installations and at $z = 3 \cdot 10^{-3}$ $\frac{1}{K}$ approaches compression installations. A semiconductor refrigerating box can compete with a compression-type box only at $z \cdot 10^3 = 6 - 8$. Semiconductor distillers, compared to direct electrical heating, reduce the consumption of electric power 5 - 7 times at $z \cdot 10^3 = 1.7 - 1.8$, and 7 - 10 times at $z \cdot 10^3 = 3$. There are 6 figures and 6 Soviet-bloc references.

ASSOCIATION: Odesskiy tekhnologicheskiy institut i kholodol'noy promyshlennosti (Odessa Technological Institute of the Food and Refrigerating Industry)

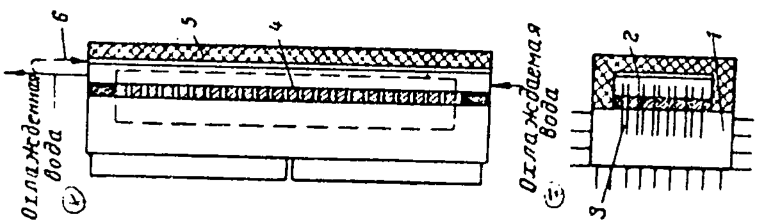

Figure 1: Semiconductor water cooler. 1 - container for cooling water; 2 - ribs of the cold junctions; 3 - ribs of the hot junction; 4 - thermobattery; 5 - heat-insulation; 6 - removal of the water into the regenerating heat-exchanger; 7 water to be cooled; 8) cooled water.

86307
S/066/60/000/004/001/...
A053/A026

24.7600 1043, 1035, 1137

AUTHORS: Martynovskiy, V. Professor, Nayer, V. Candidate of Technical Sciences

TITLE: Experimental Investigation of a Semiconductor Water Cooler

PERIODICAL: Kholodil'naya Tekhnika, 1960, 37, No. 4, pp. 13-16, USSR

TEXT: Semiconductor water coolers permit to realise the cooling cycle with changing temperatures more simple and with less heat loss than compression coolers. The absence of intermediate heat car...ers in semiconductor coolers reduces the irreversibility of heat exchange. The power efficiency of semiconducting materials is characterized by the value z, introduced by Academician A.F. Ioffe. This value for the materials known up to now can be expressed approximately as follows $z = 3 \cdot 10^{-3} \frac{1}{^{\circ}K}$. An experimental verification of the effectivenes of a thermoelectric device was obtained by investigating the cooling of water in a semiconductor water cooler. The article describes the design of the apparatus which consists of 2 sections, each section being made of a tube 550 mm long having a diameter of 16 x 10 mm and divided into 10 thermal elements, insulated from each other. Electric commutation takes place by means of fins on hot-soldered joints and by the elements of the tube on cold-soldered joints. The semi-conducting material, received from the Institute of Semiconductors had

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Experimental Investigation of a Semiconductor Water Cooler

the characteristic $z = 1.7 \cdot 10^{-3} \frac{1}{^{o}K}$. The electric system provides for the possibility of parallel feeding from rectifier and from battery. When cooling water to 10-15°C, the cooling coefficient has a value of ε = 2.5-1.25, while the maximum theoretical cooling coefficient of a thermal battery with the same temperatures of the outgoing water is ε = 1.7-0.9. The cooling coefficient of a small compression water cooler has an approximate value of 3-2.5, under equal conditions. The author concludes that in view of the absence of moving parts and simplicity of design the installation of semi-conductor water coolers presents possibilities of interesting industrial applications. There are 4 figures, 1 table and 4 references: 3 Soviet and 1 Danish.

ASSOCIATION: Odesskiy tekhnologicheskiy institut pishchevoy i kholodil'noy promyshlennosti (Odessa Technological Institute of the Food and Refrigeration Industry).

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MARTYNOVSKIY, V.

Wetted-wall cooling tower with capillary filling. Khol.tekh. 37 no.3:64-65 My-Je '60. (MIRA 13:7)
(Cooling towers)

CHULKIN, Sergey Grigor'yevich, doktor tekhn. nauk, prof.; MARTYNOVSKIY, Vladimir Sergeyevich, doktor tekhn. nauk, prof.; MEL'TSER, Leonid Zinov'yevich, kand. tekhn. nauk, dots.; Prinimali uchastiye: ALEKSEYEV, V.P., kand. tekhn. nauk, dots.; FILIPPOV, P.K., dots.; CHICHKOV, N.V., red.; BRODSKIY, M.P., tekhn. red.

[Refrigerating units] Kholodil'nye ustanovki. Moskva, Gos. izd-vo torg. lit-ry, 1961. 472 p. (MIRA 14:12)
(Refrigeration and refrigerating machinery)

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001032620014-2"

21994

S/066/61/000/003/001/002
D051/D112

26.2532, 11.9100
17 1204 9.5100 (1164)

AUTHOR: ~~Martynovskiy, V.S.,~~ Doctor of Technical Sciences
Nayer, V.A., Candidate of Technical Sciences

TITLE: Semiconductor heat transfer intensifiers and heat insulators

PERIODICAL: Kholodil'naya tekhnika, no. 3, 1961, 4-7

TEXT: The authors examine the problem of whether sets of semiconductor thermocouples (thermobatteries) can be also used as heat transfer intensifiers and heat insulators. They consider the case where such a set keeps separate two media with the temperatures T_0' and T', T_0' being higher than T'. If the circuit is disconnected, heat exchange will be carried out through the wall, where through a temperature drop the presence of a heat flow will cause a potential difference at the output terminals of the set (Seebeck effect). In this case the set appears as a heat-transferring wall and as a thermoelectric generator. Short-circuit causes the Peltier effect. The short-circuit current reduces the temperature difference between the thermocouple junctions. In connection therewith the temperature of the wall from the side of the heat-supplying medium will be reduced, whereas it will be increased from the side of the heat-receiving medium. In this way the heat flow increases due to

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Semiconductor heat transfer ...

increasing temperature drive between heat-exchanging media and wall. In the wall itself the heat transfer is realized by means of thermal conductivity and by conduction electrons. An external source of emf can change the current of the set and affect the heat flow. It can produce a current directed against the thermocurrent or coinciding with it. In these cases the heat flows at the junctions of the set have different values. In the first case an increase of the emf of the external source will result in an increase of the wall temperature on the side of the heat-supplying medium and in a reduction of temperature on the side of the heat-receiving medium, while the heat flows at the junctions will diminish. On considerable increase of the emf the current changes direction and the temperature of the hot junctions will be equal to the temperature of the heat-supplying medium. The heat-exchange between the medium and the wall will cease. The heat-receiving medium only receives the work of the external source. For the heat-supplying medium the thermobattery changes, as it were, into an ideal heat insulator. In the second case an increase of the emf of the external source results in an increase of the temperature drive between media and wall and further in an increase of the densities of the heat flows q_0 and q (q_0 and q - density of the heat flow from the side of the medium with T_0' and from the side of the medium

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with T', respectively). At the same time the current of the chain always exceeds the short circuit current; the heat transfer is intensified due to additional consumption of electric energy. The terms q_0 and q can be determined according to the formulae:

$$q_0 = \frac{1}{2} \cdot \frac{q_0'\left(1 - \frac{el}{2a} + \frac{\lambda}{2la}\right) - q'\frac{\lambda}{2la}}{\left(1 - \frac{el}{2a} + \frac{\lambda}{2la}\right)\left(1 + \frac{el}{2a_0} + \frac{\lambda}{2la_0}\right) - \frac{\lambda^2}{4l^2aa_0}}, \quad (1)$$

$$q = \frac{1}{2} \cdot \frac{q'\left(1 + \frac{el}{2a_0} + \frac{\lambda}{2la_0}\right) - q_0'\frac{\lambda}{2la_0}}{\left(1 - \frac{el}{2a} + \frac{\lambda}{2la}\right)\left(1 + \frac{el}{2a_0} + \frac{\lambda}{2la_0}\right) - \frac{\lambda^2}{4l^2aa_0}}, \quad (2)$$

where:
где: $q_0' = eT_0' i - \frac{1}{2}\rho l i^2 + \frac{\lambda}{l}(T_0' - T'), \quad (3)$

$$q' = eT' i + \frac{1}{2}\rho l i^2 + \frac{\lambda}{l}(T_0' - T'). \quad (4)$$

In the formulae (1)-(4):
e, ρ, λ - reduced values of thermoelectric parameters of semiconductor materials; T_0' and T' - temperatures of the heat-exchanging media;

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Semiconductor heat transfer ...

α_0 and α - coefficients of heat transfer;
i - density of the current;
l - length of the thermocouples.

The derivation of these formulae for the case when the set of thermocouples works under conditions required for a refrigerator was given by G. Vikhorev and V. Nayer (Ref. 2: Vliyaniye teplootdachi na kharakteristiki poluprovodnikovykh termobatarey dlya kholodil'nikov i teplovykh nasosov [Effect of heat transfer on the characteristics of semiconductor thermobatteries for refrigerators and heat pumps], Fizika tverdogo tela, vol. I, no. 6, 1959). Depending on the purpose of the installation either the heat taken from the medium with T_0' or the heat transmitted to the medium with T' can be considered as a positive effect of a battery of thermocouples. In these cases the efficiency of a heat transfer intensifier will be characterized by the coefficients ε and φ

$$\varepsilon = \frac{q_0}{w} = \frac{q_0}{q - q_0}, \tag{5}$$

$$\varphi = \frac{q}{w} = \frac{q}{q - q_0}. \tag{6}$$

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The temperatures of the junctions of the thermocouples T'_0 and T are determined from the relations

$$T_0 = T'_0 - \frac{q_0}{\alpha_0}, \quad (7)$$

$$T = T' + \frac{q}{\alpha}. \quad (8)$$

Fig. 1 shows the basic operation systems of semiconductor thermobatteries under the conditions required by a refrigerator, a thermoelectric generator, and a heat transfer intensifier; it also shows the dependencies of the junction temperatures, of the heat flow densities, and of the coefficient ε on the density of the current. The schemes were plotted according to the formulae (1) - (8). The working of a semiconductor battery under the conditions of a heat transfer intensifier was studied at the laboratory of semiconductors of the Odesskiy tekhnologicheskiy institut pishchevoy i kholodil'noy promyshlennosti (Odessa Technological Institute of the Food and Refrigeration Industry). The experiments were carried out by Engineer S.A. Rozhentseva. It was tried to establish the conditions of intensification of heat transfer between condensing water or ethyl alcohol vapors on the one side of the battery and boiling methyl alcohol on the other. The normal boiling and conden-

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sation temperatures of ethyl and methyl alcohol are 78 and 65 °C. In this way the temperature differences between the media were 35 and 13 °C. The experimental results are given in fig. 2 and 3. Fig. 2 shows the dependencies of the densities of q, q_o, and on i for the case of heat exchange between ethyl and methyl alcohol. The continuous lines indicate the relations q = f (i), q_o = f (i) and φ = f (i), if the thermobattery is fed from a rectifier connected as a bridge. The dotted lines show the relations when the thermobattery is fed from accumulator batteries. When the current is absent, q^* = q_o^* = 1060 kcal/m² hour. At a short circuit current density of 1.8 a/cm², q and q_o will increase to 1800 kcal/m² hour. In this case an external power source will not be used for the intensification of heat transfer. If the battery is fed from an external source, the heat transfer will be intensified. For instance, for the rectifier scheme at i = 11 a/cm², q and q_o increase approximately by 5 times; the electric energy consumed is about 15% of the whole amount of transferred heat, i.e. φ = 6.7. The highest values obtained for q and q_o were 26600 and 8950 kcal/m² hour, respectively. The maximum value for q_o was observed at i - 37.5 a/cm². In this case φ = 1.5. When fed from accumulators the energy indices of the installation improved under all operation conditions by approximately 10-15% as compared with those obtained through rectifier feeding. Fig. 3 shows the same dependencies for

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the case of heat exchange between condensing water and methyl alcohol vapors. The values q_0^* and q^* were 5200 kcal/m^2 hour. The density of the short circuit current was equal to 5.5 a/cm^2. The highest q and q_0 values were 18600 and 14000 kcal/m^2 hour. φ was equal to 3. A comparison between these two experiments shows that semiconductor intensifiers of heat transfer will be suitably used in those cases where natural heat exchange is not sufficiently intensive. There are 3 figures and 2 Soviet-bloc references.

ASSOCIATION: Odesskiy tekhnologicheskiy institut pishchevoy i kholodil'noy promyshlennosti (Odessa Technological Institute of the Food and Refrigeration Industry)

X

MARTYNOVSKIY, V.S., doktor tekhn.nauk, prof.; MEL'TSER, L.Z., kand.tekhn. nauk; SHNAYD, I.M., inzh.

Energy efficiency of different types of cold generators. Khol. tekh. 38 no.6:11-16 N-D '61. (MIRA 15:1)

1. Odesskiy tekhnologicheskiy institut pishchevoy i kholodil'noy promyshlennosti.
(Refregeration and refrigerating machinery)

MARTYNOVSKIY, V.S., doktor tekhn.nauk, prof.; NAYER, V.A., kand.tekhn.nauk, dotsent; ROZHENTSEVA, S.A., inzh.

Thermoelectric cooling agents. Trudy OTIPiKhP 12:3-12 '62. (MIRA 17:1)

1. Kafedra kholodil'nykh mashin Odesskogo tekhnologicheskogo instituta pishchevoy i kholodil'noy promyshlennosti.

MARTYNOVSKIY, V. S.

"Thermoelectric refrigeration; and prospects for its wide scale technical application."

Report presented at the 11th International Congress of Refrigeration, (IIR), Munich, West Germany, 27 Aug-4 Sep 63.

MARTYNOVSKIY, Vladimir Sergeyevich; MEL'TSER, Leonid Zinov'yevich; Prinimali uchastiye: ZHDAN, V.Z., kand. tekhn. nauk; DUDNIK, D.M., inzh.; LEVIT, M.M., inzh.; MART'YANOVA, I.Ya., red.

[Refrigerating plants on ships] Sudovye kholodil'nye ustanovki. Moskva, Transport, 1964. 382 p. (MIRA 17:11)

MARTYNOVSKIY, V.S.; SHNAYD, I.M.

Decrease of irreversible losses in high-temperature insulation. Teplofiz. vys. temp. 2 no.5:831-834 S-O '64. (MIRA 17:1

1. Odesskiy tekhnologicheskiy institut pishchevoy i kholodil'noy promyshlennosti.

L 37788-66

ACC NR: AP6028840 SOURCE CODE: UR/0143/66/000/002/0049/0056

AUTHOR: Dubinskiy, M. A. (Doctor of technical sciences); Martynovskiy, V. S. (Professor; Doctor of technical sciences); Umanskiy, Yu. M. (Engineer)

ORG: Odessa Technological Institute of the Food and Refrigeration Industry (Odesskiy tekhnologicheskiy institut pischevoy i kholodil'noy promyshlennosti)

TITLE: Analysis of the cycles of air-cycle refrigerators with additional heat transfer in a regenerator

SOURCE: IVUZ. Energetika, no. 2, 1966, 49-56

TOPIC TAGS: regenerative cooling, cryogenic refrigerator, refrigeration engineering, refrigeration equipment, heat transfer

ABSTRACT: It is shown that implementing the principle of additional heat transfer in the regenerator simplifies closed- and open-loop air-cycle refrigerators to the extent where they can be designed on the basis of turbomechanisms and be introduced into industry, particularly for temperatures of -70 to -80°C and lower. Those with additional heat transfer in a regenerator can be expediently employed for the combined generation of heat and cold. The use of intermittent-action regenerators assures a high degree of regeneration and a reliable performance, using moisture-contain-

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ACC NR: AP6028840

ing atmospheric air. The principle advantages are: absence of any special expensive refrigerating agent, low weight and compactness, short startup time, absence of need for cooling water, and convenience of installation in mobile power and propulsion plants. Then also the use of the hot air produced along with cold air makes it possible to dispense with the use of heat from a heat and power station or boilerhouse. Orig. art. has: 6 figures. [JPRS: 35,663]

SUB CODE: 13, 05 / SUBM DATE: 30Mar65 / ORIG REF: 007

Card 2/2

L (m) F(j)/T

ACC NR: AP6024261 SOURCE CODE: UR/0066/66/000/007/0027/0029

AUTHOR: Martynovskiy, V. S. (Doctor of technical sciences, Professor); Minkus, B. A. (Candidate of technical sciences, Docent); Barenboym, A. B. (Candidate of technical sciences); Shteynberg, I. B.

ORG: [Martynovskiy, Minkus, Barenboym] Odessa Technological Institute of the Food and Refrigeration Industry (Odesskiy tekhnologicheskiy institut pishchevoi i kholodil'noy promyshlennosti); [Shteynberg] Penza Diesel Plant (Penzenskiy dizel'nyy zavod)

TITLE: Cooling the air in an internal-combustion-engine supercharging system

SOURCE: Kholodil'naya tekhnika, no. 7, 1966, 27-29

TOPIC TAGS: supercharged engine, internal combustion engine, engine combustion system, combustion augmentation, diesel engine cooling

ABSTRACT: The range and effectiveness of augmenting internal combustion in engines through supercharging are determined by the increase of pressure in the supercharger and by the subsequent amount of air cooling. Intermediate air cooling lowers the temperature of the engine's operating cycle and simultaneously lowers thermal stress. At low air temperature the required density is attained with low super-

 UDC: 621.43:546.217:542.46

L 38457-66

ACC NR: AP6024261

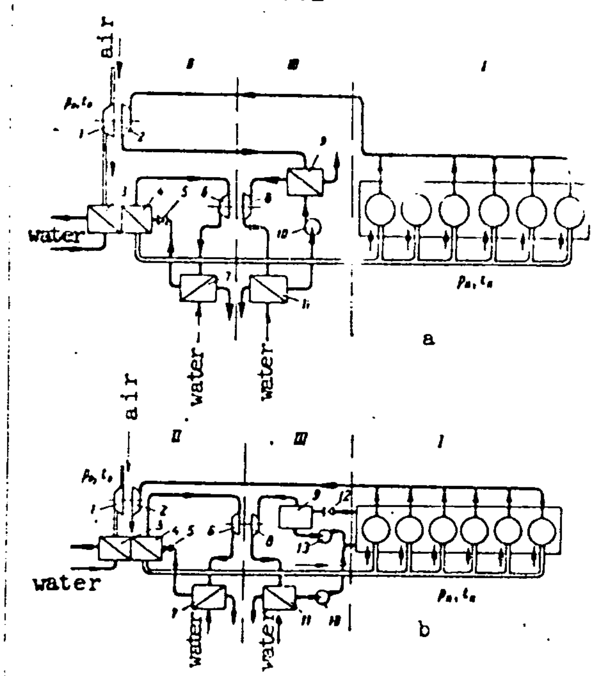

Fig. 1. Air-cooling system utilizing exhaust-gas heat (a) and water vaporization for engine (b) cooling

I - Engine; II - supercharging and cooling system; III - refrigeration compressor: 1 - centrifugal compressor; 2 - gas turbine; 3 - water air cooler; 4 - freon air cooler; 5 - regulating valve; 6 - freon compressor; 7 - condenser; 8 - refrigeration compressor turbine; 9 - waste heat boiler; 10 & 13 - pumps; 11 - condenser; 12 - throttle valve.

charging pressures; the operating-cycle pressures may therefore be lowered along with the engine's mechanical stress. The increased degree of supercharging used by modern engines necessitates greater cooling of air, and air and steam cooling systems are used to cool it below the temperature of the surrounding medium. Both of these systems were analyzed, and the steam cooling cycle was found to be most effective. The Penza Diesel Plant in cooperation with the OTIPKhP has developed a more sophisticated heat-recovery unit for air cooling, which features minimum size and weight (see Fig. 1). A feature of this system is the use of the engine's water-jacket space as the freon boiler. In this way the heat acquired by cooling the engine is used, and the freon-turbine condenser is exchanged for the water of the cooling area. The vapor cooling cycle can also be used with water-vaporization engine cooling (Fig. 1, b), but in this case an elevated temperature is produced in the water-jacket space. The type of cooling and its drive depends on the operating conditions and on the type of engine. For low-powered diesels and two-cycle automotive diesel engines, it is feasible to use a piston-type or rotary compressor driven from the engine's shaft. For powerful motor vehicles, the best system is one using a centrifugal compressor and turbine operating on exhaust gases. For marine and stationary engines, where there is an adequate supply of cooling water, it is more practical to use a cooling unit which recovers heat. The air cycle can only be used for four-cycle engines with low supercharging pressure. Modern supercharged engines should use vapor compressors. Orig. art. has: 4 figures. [KT]

SUB CODE: 21/ SUBM DATE: none/ ORIG REF: 001/ ATD PRESS: 5048

ACC NR: AP6030571 SOURCE CODE: UR/0413/66/000/016/0040/0040

INVENTOR: Martynovskiy, V. S.

ORG: none

TITLE: The refrigeration cycle and a unit for carrying it out. Class 17, No. 184885

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 16, 1966, 40

TOPIC TAGS: refrigerant liquid, refrigerating system, refrigeration cycle, REFRIGERATION ENGINEERING

ABSTRACT: This Author Certificate has been issued for a refrigeration cycle which involves the compression, cooling, expansion, and refrigration of the working fluid. The working fluid used in this case is a dropping liquid which does not change its state of aggregation during the entire cycle. A more efficient unit which carries out this cycle includes two closed circuits: one circuit is used for the compression of the working body and for preliminary cooling and expansion; the other circuit is used for heating the working fluid in the refrigerator and for transferring it to a storage cell. For easier operation of the unit, an additional pump, which can be attached to each of the circuits, can be used for transferring the working fluid as necessary. Orig. art. has: 1 figure.

SUB CODE: 13, 11/ SUBM DATE: 04Oct48/

UDC: 621.574.9:66-911.4

Card 1/1

ACC NR: AP7005720 SOURCE CODE: UR/0143/66/000/010/0073/0077

AUTHOR: Martynovskiy, V. S. (Doctor of technical sciences, Professor); Mel'tser, L. Z. (Candidate of technical sciences, Docent); Shnayd, I. M. (Candidate of technical sciences)

ORG: Odessa Technological Institute for the Food and Refrigeration Industries (Odesskiy tekhnologicheskiy institut pishchevoy i kholodil'noy promyshlennosti)

TITLE: Thermal insulation with minimal exoergic losses

SOURCE: IVUZ. Energetika, no. 10, 1966, 73-77

TOPIC TAGS: thermal insulation, entropy, irreversible thermodynamics, heat transfer coefficient, heat conductivity coefficient

ABSTRACT: The magnitude of the exoergic losses, E, in insulation in unit time is determined by the following expression:

$$E = T_s\frac{dS}{dt}, \qquad (1)$$

where T_S is the temperature of the surrounding medium; S is the entropy arising in the insulation; t is the time. Minimal exoergic losses exist in an insulating construction with a minimum rate of entropy formation, dS/dt. In the one-dimensional case considered in the article, the quantity dS/dt is determined by the methods of

 UDC: 662.998

ACC NR: AP7001750

non-equilibrium thermodynamics as

$$\frac{dS}{dt} = F\int_0^l \lambda(T)\left(\frac{1}{T}\cdot\frac{dT}{dx}\right)^2 dx, \qquad (2)$$

where F, l are, respectively, the area and the thickness of the insulating construction; x is a coordinate, calculated in a direction normal to the isothermal planes in the insulation; T is the absolute temperature; λ (T) is the heat conductivity coefficient of the insulation. From the mathematical solution of the above problem, the following conclusions are drawn: 1) the conditions for a minimum in the exoergic losses are a result of irreversible heat transfer in the heat insulation, and are determined by the nature of the heat conductivity coefficient λ (T); 2) if λ does not depend on the temperature, or if it decreases with a decrease in the temperature, the absence of heat removal from the insulation is a necessary condition for the attainment of minimum exoergic losses. Orig. art. has: 15 formulas and 1 figure.

SUB CODE: 11, 20/ SUBM DATE: 29Nov65/ ORIG REF: 003/ OTH REF: 002

TIKHONOV, A.F., kandidat tekhnicheskikh nauk; APANOVICH, A.M.; MARTYNOVSKIY, Ye.I.; KOMAROV, Yu.M.; TRUKHANOVA,A., tekhnicheskiy redaktor

[Progressive lumbering methods] Peredovye metody truda na lesozagotovkakh. Pod obshchei red. A.F.Tikhonova. Minsk, Gos. izd-vo BSSR, 1956. 111 p. (MLRA 9:11)
(Lumbering)

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(BLOOD PRESSURE, physiology,
extremities, oscillometric perop. & postop. changes (Pol))
(SURGERY, OPERATIVE, blood in,
pressure in extremities, oscillometric perop. & postop. changes (Pol))

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perop. & postop. of extremities (Pol))
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(EIMERIA, infections,
tenellum in chicks, blood proteins in (Pol))

(BLOOD PROTEINS, in various diseases,
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(CAT DISEASES) (DOG DISEASES)
(HOOKWORM INFECTIONS) (STATISTICS)
(INTESTINAL DISEASES, PARASITIC)

POLAND

[illegible]WICZ, Tadeusz and [illegible]SZ, Alojzy, Chair of Parasitology and Invasive Diseases (Katedra Parazytologii i Chorob Inwazyjnych), Veterinary Division (Wydzial Weterynaryjny), WSR (Wyzsza Szkola Rolnicza, Higher School of Agriculture in Wroclaw (Director: Prof. Dr. Zbigniew KOZAR)

"Syngamosis of Pheasants, Its Treatment and Prophylaxis."

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Abstract: [Authors' English summary modified] Authors discuss the epizootiology and prophylaxis of syngamosis in pheasants and describe the mechanics of their treatment with Stibium barium tartaricum in powder form. There are 16 references, of which [illegible] are Western, 2 German, and the others Eastern Bloc (including 7 Polish).

1/1

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KASSNER, Jerzy

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1. Pracownia [illegible] Zakład [illegible] Polskiej Akadem. Nauk, Wrocław; [illegible] Katedra Parazyt[illegible] i Chorob Inwazyjnych [illegible] Zakład Histologii Wyzszej Szkoly [illegible], Wrocław.

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Titan apparatus and autoclaves, [illegible] mechanical [illegible] Miesna, Vol. 8, [illegible], Nov 1956, Warsaw, Poland)

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(Labor (Obstetrics)) (Beloshapko, P.A.) (Maliavinskii, V.M.)

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(PERCUSSION
of abdomen in pregn.,
Kulb's diag. value)
(OBSTETRICS
Kulb's percussion in, diag. value)

MARTYNSHIN, M.Ya (g. Stalino)

Reflex treatment in inflammations of the internal female genitalia. Akush. i gin. 32 no.1:67-69 Ja-F '56 (MLRA 9:6)

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(GENITALIA, FEMALE, abscess
reflex ther.)
(ABSCESS
female genitalia, reflex ther.)
(REFLEX
cutaneo-vasc., in ther. of female genital abscess)

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"Anesthetization and acceleration fo delivery." P.A.Beloshapko, A.M.Foi. Reviewed by M.IA.Martynshin. Akush. i gig. 33 no.2:92-93 Mr-Ap '56. (MLRA 9:7)

(LABOR (OBSTETRICS)) (ANESTHESIA IN OBSTETRICS)
(BELOSHAPKO, P.A.) (FOI, A.M.)

BELOSHAPKO, P.A., prof. [deceased]; MARTYNSHIN, M.Ya.; DYUZHINOVA, V.M.; IGNATOVA, V.D.; POTSELUYEVA, S.I.; TOLSTOVA, M.I.

Features of the course and management of labor in breech presentation. Akush.i gin. 36 no.5:28-34 S-O '60. (MIRA 13:11)

1. Iz Instituta akusherstva i ginekologii (dir. - chlen-korrespondent AMN SSSR prof. P.A. Beloshapko [deceased]) AMN SSSR.
(LABOR (OBSTETRICS))

MARTYNSHIN, M.Ya.

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(PREGNANCY) (UTERUS)

MARTYNSHIN, M.Ya.

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1. Akusherskoye otdeleniye (zav. - prof. Ya.S.Klenitskiy) Instituta akusherstva i ginekologii AMN SSSR.

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YEFROYMOVICH, Yu.Ye.; MARTYNUSHKIN, A.M.; TSUKANOV, V.P.; SHIKOV, I.P.; NIKONOV, A.V.; KABLUKOVSKIY, A.F.; KOTIKOV, A.N.; KOLCHANOV, V.A.; VINOGRADOV, V.M.; GENISHT, Ye.S.

VU-5086 computer and high-speed electronic automatic controller for regulating power supply to electric arc furnaces. Prom. energ. 18 no.7: 7-8 Jl '63. (MIRA 16:9)

(Electric furnaces)

MARTYNYAK, M.V.

Striving for the title of enterprise of communist labor. Neftianik 8 no.6:22-23 Je '63. (MIRA 16:11)

1. Master-instruktor po podzemnomu remontu skvazhin NIS ob"yedineniya Ukrzapadneftegaz.

Martynychev, A.N.

UGLOV, F.G., prof.; MARTYNYCHEV, A.N., kand.med.nauk

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1. Iz kafedry gospital'noy khirurgii (zav. - prof. F.G.Uglov) I Leningradskogo meditsinskogo instituta.
(PNEUMOTHORAX, ARTIFICIAL, effects,
on pulm. blood pressure (Rus))
(ARTERIES, PULMONARY, physiology,
pressure in artif. pneumothorax (Rus))
(BLOOD PRESSURE,
pulm. in artif. pneumothorax (Rus))

MARTYNYUK, A.G.

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[Form and function of the kidney surviving unilateral nephrectomy] Sostoianie i funktsiia ostavsheisia pochki. Kiev, Gos.med. izd-vo USSR, 1955. 87 p. (MLRA 9:3)

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1. Iz kafedry fakul'tetskoy khirurgii (zav.prof. A.G.Martynyuk) Stanislavskogo meditsinskogo instituta (dir.dots. S.S. Lavrik)
(VENA CAVA, wounds and injuries,
in kidney surg., ther.perimural clamps)
(KIDNEYS, surgery,
peroperative inj. of vena cava, ther.perimural clamps)
(SURGERY, OPERATIVE, complications,
vena cava inj. in kidney surg.ther., perimural clamps)